DOCUMENT RESUME

ED 303 428 SP 030 842

AUTHOR Kirk, Pamela A.; O'Neal, E. C.
TITLE Discriminant Analysis of Teachers' Learning Styles: Profiled by Teaching Areas.
PUB DATE Nov 88
NOTE 10p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Louisville, KY, November 9-11, 1988).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Style; Comparative Analysis; Elementary Secondary Education; *Individual Differences; *Learning Processes; *Public School Teachers; *Teacher Attitudes
IDENTIFIERS *Canfield Learning Styles Inventory

ABSTRACT

This study sought to determine if 17 affective variables on the Canfield Learning Styles Inventory Form S-A would discriminate among teaching areas of Mississippi public school teachers. The learning style inventory was administered to 86 teachers grouped into four teaching areas: elementary, secondary, special education, and others (library personnel, physical education, art and music). The mean scores were used to construct a learning style profile for each of the groups. The elementary group had a preference for interpersonal relations with individuals, a need for working independently, a structured learning environment, manipulation of mathematical concepts and qualitative symbols, learning through printed materials, and overall high expectancy. Secondary teachers revealed a preference for: competition, authority, numeric content, reading, and overall high expectancy. The special education group indicated a preference for: comparisons, competition, a controlled teacher-directed learning environment, involvement with numbers and reading. The "other" group had a preference for peer affiliations, controlled learning environment, numeric manipulations, reading and an overall high expectancy score. Implications for effective teacher workshops are discussed. (JD)

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DISCRIMINANT ANALYSIS OF TEACHERS' LEARNING STYLES: PROFILED BY TEACHING AREAS

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by

Pamela A. Kirk, Mississippi State University
E.C. O'Neal, Mississippi State University

Presented at the Annual Conference of the Mid-South Educational Research Association, Louisville, Kentucky, November 9-11, 1988

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Discriminant Analysis of Teachers' Learning Styles: Profiled by Teaching Area

Pamela A. Kirk and E.C. O'Neal

While learning style preferences are being identified, studied and researched by educators more frequently, little application of this information is being made in the classroom setting and less in educating our educators. Nationally it appears that increasing numbers of school districts require a staff development system management program as a viable link to school improvement. Staff development has been defined as the professional improvement experiences gained by certified school personnel, and teaching assistants. In the state of Mississippi, successful completion of twenty-six (26) staff development credits each year enables a teacher to be eligible for recertification.(Staff Development Questions and Answers for Teachers and Administrators,(1985).

Seemingly, one of the tools for significant school improvement is in place, and more definitive research is needed to insure the mechanism of effectiveness. An informative study by Ommen, Brainard, and Canfield (1979) compared the learning style preferences of 1,064 older students (25 years and more) with 1,760 younger students (20 years and less). Their findings demonstrated a significant difference at the .01 level on 17 of the 21 scales. Another major finding of this study was that older students prefer traditional instructional formats as opposed to iconics and direct. This finding lends direction to selection of staff development topics, and the actual implementation of the topic to the participant (Ommen, Brainard, & Canfield, 1979). More definitive investigations will increase the knowledge base, the planning and implementation of school improvement.

The Problem

The problem in this study was to determine if seventeen affective variables on the Canfield Learning Styles Inventory Form S-A would discriminate among teaching areas of public school teachers. The specific research questions in this study were:

1. What was the learning style profile for each of the four groups investigated?

2. What affective variables differed among the four groups?

Research Procedures

Data for the predictor variables that effect learning, and contribute to the satisfactory and effective adjustment to the teaching learning situation were collected from subjects during an in-service staff development training session. The Canfield Learning Style Inventory S-A was used to provide information on the four major teaching areas, and seventeen affective variables.

Subjects

The sample was composed of eighty-six public school teachers from a county district in Mississippi who were enrolled in a staff development. All participants completed the learning style inventory. There were twenty male and sixty-six female subjects. Their teaching experience varied from thirty years to beginning teachers. The subjects were grouped into four teaching areas: elememtary (N=24), secondary (N=20), special education (N=20) and others (N=24). The others category consisted of teacher aids, library personnel, physical edcuation, art and music teachers.

Instrument

Data were collected through the use of the Canfield Learning Styles Inventory Form S-A. The Canfield Inventory was developed by Albert A. Canfield in 1980. The inventory is available in two forms: Form E which measures the same dimensions as Form S-A, but is readable at the 5th grade level, and Form S-A, which was used by these investigators. The instrument is composed of four major elements. One of these major areas, conditions, reveals the relationship between an individual's motivations and the environmental influences that an individual is most responsive in. Two-fifths of the items in the inventory are designed to measure the individual's motivational qualities. The area, content, indentifies the subject matter of greatest interest. The mode area refers to specific modality through which an individual learns best. The area of expectations is included as one of the major contributionas in personality, self-concept, and achievement research. Within this instrument data is collected from which an expectancy score is developed. The Learning Styles Form S-A Manual reported scale reliabilities ranging from .59 to .92 (1981).

Methods of Data Analysis

Mean scores of each of the seventeen variables were used to determine a learning style profile for each of the four groups. Analysis of variance with the Scheffe procedure was used to determine if there were significant differences among the groups on each of the variables of the instrument. Discriminant analysis was used to determine the set of variables differentiating among the teacher's learning styles.

Results of the Study

The mean scores were used to construct a learning style profile for each of the teacher groups. The elementary group profile suggested a high preference for: interpersonal relations with individuals in the same situation, a need for working independently, and for a structured learning environment: manipulation of mathematical concepts and qualitative symbols (words): learning through printed materials; and a overall high expectancy score. They least preferred listening as a sensory imput mode.

The profile for the secondary group revealed a high preference for competition, authority, numeric content, reading and an overall high expectancy score. In summary the secondary group preferred comparing performance with others, mathematical manipulations, well-controlled, formal learning envrionment, accomplishing learning through study of printed materials, books, magazines, pamphlets, and articles. This group had a low preference for instructor affiliation, counseling, helping relationships, and laboratory experiences.

The special education group revealed a high preference for comparisons, and competition with others: a controlled teacher directed learning environment: involvement with numbers, mathematical computations, and the reading modality. They least preferred individual goal setting, working independently; and the listening sensory channel.

The other group had a high preference for: peer affiliations; well-controlled learning environment: numeric manipulations: reading and an overall high expectancy score. They least preferred goal setting, and demonstrate no need for knowing the instructor personnally.

The means and standard deviations are shown in Table I. Two variables, independence in the condition's factor, and people in the content factor had a significant F ratio at the .05 level, but could not be confirmed by the Scheffe. One variable, listening mode, was significant at .05 level and Scheffe confirmed that the elementary group and the secondary group were significantly different.

The results of the discriminant analysis are shown in Table II and Table III. Function 1 with a chi square of 71.80 was significant at the .03 level. In Function 1 nine variables loaded to the discriminant set of variables at the .40 level or higher. These variables are shown in Table III.

Implications of the Study

These findings suggest that when teachers are grouped for educational experiences they are more alike than different in learning stlye preferences. It appears that the preferred sensory mode for all groups is reading. Consequently, the traditional utilization of printed materials in workshops is a viable educational tool for the groups studied. Other dimensions, such as need for interpersonal relations, structure of the learning environment, and competition, were group specific and are important when planning for grouping, and teaching methodology. As staff development programs are planned and submitted by each school district for approval and school accreditation, educators should be cognizant of group likes and differences and plan their resources, and strategies to meet these needs.

Table I

Comparison of Four Teacher Groups on Learning Style Variables

Learning Style Variable	Elementary X	Elementary S.D.	Secondary X	Secondary S.D.	Spec. Educ. X	Spec. Educ. S.D.	Others X	Others S.D.	F. Ratio
Conditions									
Peer	14.17	3.05	15.21	3.85	14.70	3.96	14.21	3.35	.39
Organization	12.61	2.33	11.68	3.61	11.30	2.65	11.50	2.45	.98
Goal Setting	14.74	2.12	16.37	3.45	16.15	2.62	16.29	2.82	1.74
Competition	18.35	2.96	17.53	2.78	17.50	2.67	18.04	2.27	.51
Instructor	13.96	2.95	15.42	3.47	13.10	3.11	15.38	3.81	2.38
Detail	14.61	2.97	12.63	2.17	13.75	2.95	14.21	2.50	2.08
Independence	15.61	2.87	17.68	3.83	18.10	2.95	16.04	2.99	3.18*
Authority	16.13	3.95	14.32	4.32	15.05	2.42	14.54	3.05	1.18
Content									
Numeric	15.30	3.40	14.74	5.58	16.45	4.08	16.88	4.79	1.03
Qualitative	12.43	2.87	14.26	4.74	14.80	4.06	13.16	3.71	1.64
Inanimate	17.04	3.21	15.63	3.95	15.65	3.41	16.67	3.36	.91
People	15.22	3.74	15.32	3.61	12.60	3.46	13.08	3.37	3.35*
Mode									
Listening	16.22	3.73	12.42	4.02	15.10	5.38	13.63	3.40	3.38**
Reading	16.43	3.75	15.38	4.14	16.80	5.30	16.67	5.21	.27
Iconic	13.09	3.01	15.63	3.34	13.95	3.53	14.46	3.13	2.22
Direct Experience	14.43	4.24	16.16	4.34	13.80	4.67	14.75	4.78	.93
Expectancy Score	24.43	12.31	19.32	8.92	18.70	9.74	19.54	9.78	1.41

* Significant but not confirmed by Scheffe at .05
** Confirmed by Scheffe at .05

Table II

Results of Discriminant Analysis Employing Learning Styles as Differentiating Variables Among Teacher Groups

Function	Percentage of Variance	Canonical Correlation	df	Chi Square	Significance
1	51.61	.61	51	71.80*	.03
2	35.48	.51	32	36.18	
3	12.92	.36	15	10.53	

Table III

Learning Styles Leading to Significant Discriminant Set of Variables

Variable	Function 1
Peer Conditions	.88
Goal Setting Conditions	.86
Detail Conditions	.71
Qualitative Content	.67
Authority Conditions	.61
Organization Conditions	.53
Numeric Content	.16
Competition Conditions	.10
Reading Mode	.10

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